200.1 **REACTION MOTOR (E.G., MOTIVE FLUID GENERATOR AND REACTION NOZZLE, ETC.)**
201 .Rotating or cyclic movement during axial thrust
202 .Ion motor
203.1 .Electric, nuclear, or radiated energy fluid heating means
204 .Method of operation
205 ..By chemical reaction
206 ...Utilizing indirect heat exchange
207 ...Utilizing plural reaction zones within a system
208 ...Injecting air into the reaction zone
209 ....Including using additive material
210 .....Injected separately
211 ...Injecting separate streams of fuel and oxidizer (e.g., hypergole, etc.) into the reaction zone
212 ....Using igniter aid
213 .....Injected separately
214 ....Oxidizer in the form of a mixture
215 ....Fuel in the form of a mixture
216 .....One component free metal
217 ...Injecting mixture of fuel and oxidizer into the reaction zone
218 ...Decomposing a compound in the reaction zone
219 ...Using solid material in reaction zone
220 ....Including injecting modifying fluid
221 .Motive fluid principally liquid
222 ..Plural discharge outlets
223 .With destruction sensing and preventing means
224 .Interrelated reaction motors
225 ..Sequentially operated
226.1 ..Air and diverse fluid discharge from separate discharge outlets (e.g., fan jet, etc.)
226.2 ...Having thrust reverser
226.3 ...Having means to effect a variable bypass ratio
227 .Motive fluid principally steam
228 .With thrust direction modifying means
229 ..With plural selectively usable motive fluid ejecting means
230 ..Jet stream deflecting means
231 ...By secondary fluid injection
232 ..Motive fluid outlet movable relative to motor part
233 .Condition responsive thrust varying means
234 ..Solid propellant depletion control
235 ..Motive fluid outlet area and fuel flow control
236 ...Plural spool motor-compressors
237 ...Outlet area sensed to control fuel or oxidizer flow
238 ...Motive fluid temperature sensed to control fuel flow or outlet area
239 ...Compressor or turbine speed sensed to control fuel flow or outlet area
240 ..Oxidizer and fuel flow control
241 ..Plural burners in series
242 ..Outlet area control
243 ..Fuel flow control
244 .Motive fluid from diverse generators alternatively ejected through outlet
245 ..Propellant supply used in one operation reduced before starting another
246 .Turborocket
247 .Intermittent combustion
248 ..Air bypass passage
249 ..Aerodynamic valve
250 .Plural propellants to burn sequentially
251 .Solid and fluid propellant
252 .Gel propellant
253 .Solid propellant
254 ..Including means to terminate or regulate motive fluid production
255 ..Including propellant support means
256 ..Including ignition means
257 .Liquid oxidizer
258 ..Including injector means
259 ..Including pressurizing means
260 ..Including heating means
761 .Having afterburner
762 ..Having oxidizer bypzssed to afterburner feature

763 ..Movable flame holder
764 ..Fuel flow control
765 ..Particular flame holder structure
766 ..Particular liner or casing structure
262 .Air passage bypasses combustion chamber
263 .Plural motive fluid generating means or plural outlets
264 .Including motive fluid treating means
265 .Means to flow film on surface
266 .Including heat exchange means
267 ..For a liquid
268 .Including counter rotating rotors
269 .Including mechanical air compressor or air flow inducing means
767 .Air supplied by ram effect (e.g., ramjet, etc.)
768 ..Supersonic speed therethrough (e.g., scramjet, etc.)
769 ..Solid fuel
770 .Particular exhaust nozzle feature
771 ..Having variable area
595 **INTERNAL COMBUSTION TYPE FREE PISTON DEVICE SUPPLIES MOTIVE FLUID TO MOTOR**
596 **INTERNAL COMBUSTION TYPE FREE PISTON DEVICE WITH PRESSURE FLUID STARTING MEANS**
597 **FLUID MOTOR MEANS DRIVEN BY WASTE HEAT OR BY EXHAUST ENERGY FROM INTERNAL COMBUSTION ENGINE**
598 .With supercharging means for engine
599 ..With means to change temperature of supercharged flow
600 ..With condition responsive valve means to control supercharged flow and exhaust products
601 ...With coordinated engine fuel control
602 ..Having condition responsive valve controlling engine exhaust flow
603 ...With coordinated fuel control means for engine
604 ..With heat exchanger to transfer energy from engine exhaust to motive fluid for motor
605.1 ..Supercharging means driven by engine exhaust actuated motor
605.2 ...With exhaust gas recirculation
605.3 ...With motor bearing lubrication or cooling
606 ...With means to provide additional motive fluid for motor
607 ...With additional drive means for supercharging means
608 ....With condition responsive drive means control
609 ...Fluid motor and engine each drive at least one means to supercharge the engine
610 ....Supercharging means convertible from series to parallel
611 ...Having condition responsive means to control supercharged flow to engine
612 ...Plural superchargers
613 .With means to store combustion products prior to entry into fluid motor means
614 .Having fluid motor motive fluid treating, controlling or conditioning means
615 ..Having condition responsive control of motive fluid
616 ..Having means to transfer heat energy between engine exhaust and motive fluid for fluid motor
617 ...And having means to add fluid to motive fluid
618 ...Motive fluid is vaporized liquid
619 ..Having means to add a diverse fluid to combustion products
620 .Fluid motor means is expansible chamber type with movable parts of motor and engine being interconnected
621 ..Movable wall portions are rigidly interconnected
622 ..Expansible chamber of fluid motor means receives exhaust alternately from two or more expansible chambers of engine means

623 ..Fluid motor is rotary type
624 .Fluid motor means is a turbine with output means mechanically interconnected with internal combustion engine output
272 **INTERNAL COMBUSTION ENGINE WITH TREATMENT OR HANDLING OF EXHAUST GAS**
273 .Methods
274 ..Anti-pollution
275 .By electrolysis, electrical discharge, electrical field, or vibration generator
276 .Having means analyzing composition of exhaust gas
277 .Having sensor or indicator of malfunction, unsafeness, or disarray of treater (e.g., fusible link, etc.)
278 .Material from exhaust structure fed to engine intake
279 ..Separated reactive constituent of exhaust fed to engine
280 .Having auxiliary device mechanically driven by exhaust gas
281 .Having exhaust gas collection and storage, or use as a pressure fluid source
282 .By means producing a chemical reaction of a component of the exhaust gas
283 ..With means handling crankcase, carburetor, or gas tank vapor
284 ..Automatic or timed reactor purge or heat-up in engine starting operation
285 ..Engine fuel, air, or ignition controlled by sensor of reactor condition
286 ..Condition responsive control of heater, cooler, igniter, or fuel supply of reactor
287 ..Condition responsive control of reactor feed, pressure, or by-pass
288 ...Exhaust gas diverted from reactor or treating agent mixer
289 ...Air feed to reactor modulated or diverted by control
290 ....Responsive to engine speed or intake manifold pressure
291 ...Of or by pressure in reactor or of engine exhaust
292 ....Valve at reactor outlet controlled
293 ....Check valve feeds air to exhaust system
294 ..Reactor control correlated with cyclic or external engine control
295 ..Having means for regenerating, replacing, or feeding liquid or solid reagent or catalyst
296 ...Flow reversing structure
297 ..Reactor plus a washer, sorber or mechanical separator
298 ..With means cooling reactor or reactor feed
299 ..Using a catalyst
300 ...Having a means for heating the catalyst
301 ...Reducing type catalyst
302 ...Catalyst in engine manifold or at exhaust port
303 ..Having heater, igniter, or fuel supply for reactor
304 ..Oxidizer feed passage at engine exhaust valve, manifold or port
305 ...Distributed to plural individual ports or valves
306 ...To port zone and downstream of port
307 ..Pressurizing means feeds reactive air to reactor
308 ...Exhaust actuated air aspirator
309 .Having retainer or flow director for exhaust gas condensate
310 .Treated by washing, or having liquid contact structure
311 .By sorber or mechanical separator
312 .Pulsed, timed, tuned or resonating exhaust
313 ..Correlated exhausts from plural cylinders
314 ..Two-cycle engine
315 .Pump draws exhaust gas from engine
316 ..Fluid jet or stream aspirates exhaust gas
317 .Exhaust and external fluid mingling structure
318 ..External fluid is steam
319 ..Exhaust aspirates external fluid

320 .Exhaust gas or exhaust system element heated, cooled, or used as a heat source
321 ..Cooled manifold
322 .Having vibration attenuating, or expansion and contraction relieving structure
323 .Common receiver having inlets from plural cylinder (i.e., exhaust manifold)
324 .Divider, collector, valve means, or boundary layer device controlling exhaust gas flow
625 **INTERNAL COMBUSTION ENGINE WITH STRUCTURE ROTATING OR STARTING IT BY PRESSURE FLUID**
626 .Having means for compressing, generating or storing pressure fluid
627 ..Having condition responsive control of means
628 ..Storage vessel charged by internal combustion engine acting as a pump
629 ..Pressure fluid motor convertible to pressure fluid pump
630 .Having manual selector of engine valve settings or of fluid flow branches
631 ..Including means selecting direction of engine rotation
632 **ONE SHOT EXPLOSION ACTUATED EXPANSIBLE CHAMBER TYPE MOTOR**
633 .Having means for feeding fluid fuel
634 .Having plural charge holding means
635 .Having mechanical means securing working member in fired position
636 .Having latch, rupture or safety means resisting movement of working member or firing means from unfired position
637 .Having orifice or conduit restricting flow of combustion products from combustion zone to motor chamber
638 .Having shock absorbing, damping or slow down means for working member
39.01 **COMBUSTION PRODUCTS USED AS MOTIVE FLUID**
772 .Processes
773 ..Having power output control
774 ..Multiple expansion
775 ..Introducing water or steam
776 ..Ignition or fuel injection after starting
777 ...Catalyst
778 ..Having particular starting
779 ..Having particular safety
780 ..Having fuel conversion (e.g., reforming, etc.)
781 ...Solid fuel
782 ..Having bleed air to cool or heat motor or component thereof (e.g., active clearance control, etc.)
783 ..Combined with diverse nominal process
784 .For nominal other than power plant output feature
785 ..Air bleed
39.08 .With lubricators
39.091 .With safety device
39.092 ..Debris anti-ingestion preventer
39.093 ..Ice preventer or de-icer
39.094 ..Fuel flusher or drainer
39.1 ..Excess pressure relief
39.11 ..Flame screen
39.12 .With combustible gas generator
39.13 .Automatic starting and stopping of combustion products generator
786 .Combined with starting feature
787 ..Separate device or motive fluid source
788 ...Starter motor mechanically coupled to power plant mechanically coupled to power
789 ...Solid propellant charge initiates starting (e.g., cartridge starter, etc.)
790 ..Having condition responsive fuel control
39.15 .Multiple fluid-operated motors
791 ..Re-expansion
792 ...Multi-spool turbocompressor
39.162 ...Counter - rotatable
39.163 ...Selectively connectable
39.17 ...With treatment between stages
39.181 ..Different fluids
39.182 ...Steam and combustion products
39.183 ...Air and combustion products
39.19 .Different fluids
39.23 .With variable oxidizer control

793 .Combined with regulation of power output feature regulation of power output feature
39.21 ..Plural generators, selectively operable
39.22 ..Varying cycle frequency relative to prime mover speed
39.24 ..Automatic
39.25 ...Motive fluid to prime mover
39.26 ...Oxidizer, fuel and water or steam
39.27 ...Oxidizer and fuel
39.281 ...Fuel
39.282 ....Torque sensor
794 ...Oxidizer
795 ....Bleed
39.3 ...Water or steam
796 .Having mounting or supporting structure
797 ..For motor
798 ..Having ease of assembly or disassembly feature
799 .Having expansible connection
800 ..Combustor or fuel system
801 .Convertible or combined with feature other than combustion products generator or motor
802 ..Motor driven accessory
803 ..Motor condition sensing feature
39.34 .Rotating combustion products generator and turbine
39.35 ..Continuous combustion type
804 .Coaxial combustion products generator and turbine
39.37 .Plural combustion products generators in ring coaxial with turbine
39.38 ..Intermittent combustion type
39.39 ...Common rotary distributing valve
39.4 ...Common cam member
39.41 .With exhaust pump for combustion products generator
39.42 .With reversible turbine
39.43 .With dual function turbine
39.44 .With closed pocket turbine
39.45 .With gear, pressure exchanger, or screw-type compressor
39.461 .Using special fuel or oxidizer
39.462 ..Monofuel type
39.463 ..Plural distinct fuels
39.464 ..Solid, slurry, emulsive, or suspensive type fuel
39.465 ..Gaseous fuel at standard temperature and pressure
39.47 ..Solid fuel containing oxidizer
39.48 .With fluid pressure feeding of oxidizer, fuel or water
39.49 .With air injection by fuel or steam jet
39.5 .With exhaust treatment
39.511 ..Regenerator
39.512 ...Rotary heat exchanger
39.52 ..Exhaust gas recycling
39.53 .With addition of steam and/or water
39.54 ..Added in prime mover
39.55 ..Added in combustion products generator
39.56 ..Mixed in space above water
39.57 ...Combustion products pass through water
39.58 ..Added in mixing nozzle or in turbine nozzle
39.59 ..Added in separate mixing chamber
39.6 .External-combustion engine type
39.62 ..With plurality of combustion products generator per cylinder
39.63 ..Continuous combustion
39.64 .Alternate cycle
722 .Combustion products generator
723 ..Having catalyst in combustion zone
724 ..Plural with intercycling by pressure fluctuations
725 ..Having noise reduction means
726 ..With means to pressurize oxidizer for combustion or other purposes
727 ...With oxidizer accumulator
728 ...Having oxidizer cooling means
729 ...Reciprocating positive displacement type
730 ..With liquid heat exchanger
731 ..With combuston products accumulator
732 ..Having initial fuel-rich combustion zone
733 ...Separate fuel injectors for plural zones
734 ..Having fuel supply system
735 ...Fuel injected into turbine
736 ...Fuel preheated upstream of injector
737 ...Fuel and air premixed prior to combustion

738 ....Premix tube within combustion zone
739 ...With fuel supply manifold for separate injectors
740 ...With fuel injector
741 ....Fuel control valve integral with injector
742 ....Unitary injector having plural fuel flow paths
743 ....Surface film injector
744 ....Rotary fuel injector
745 .....Slinger type
746 ....Plural distinct injectors
747 .....Injectors in distinct radially spaced parallel flow combustion products generators arranged to combine discharges
748 ....With attendant coaxial air swirler
749 ...Having bluff flame stabilization means
750 ..Having means to recycle combustion products internally of combustion zone
751 ..Having diffuser for air inlet
752 ..Combustor liner
753 ...Ceramic
754 ...Porous
755 ...Having means to direct flow along inner surface of liner
756 ....Air directed to flow along inner surface of liner dome
757 ....In an axial direction
758 ...Air introduced within liner counter to flow of combustion products
759 ...Air scoop extends into air flowing outside liner
760 ...Air outside liner flows counter to combustion products flow within liner
805 ..Having turbine
806 ...And cooling
39.76 ..Intermittent combustion type
39.77 ...Resonating
39.78 ...Rotating, oscillating, or reciprocating
39.79 ...With fluid actuated valve
39.8 ...With pressure actuated valve
39.81 ...With fuel metering valve
39.821 ..With ignition device
39.822 ...Catalytic type
39.823 ...Pyrotechnic squib or charge type
39.824 ...Hypergolic type
39.825 ...Single shot liquid type
39.826 ...Pilot or torch type
39.827 ...Spark type
39.828 ...Incandescent type
39.83 .Cooling of auxiliary components

639 **MOTOR ACTUATED BY ACCUMULATING AND DUMPING LIQUID OR FLUENT MATERIAL**
640 .Rocking member having opposite accumulating means

641.1 **UTILIZING NATURAL HEAT**
641.2 .Geothermal
641.3 ..With direct fluid contact
641.4 ..With deep well turbopump
641.5 ..With fluid flashing
641.6 .With natural temperature differential
641.7 ..Ocean thermal energy conversion (OTEC)
641.8 .Solar
641.9 ..With distillation
641.11 ..With elevated structure
641.12 ...Air is working fluid
641.13 ..With single state working substance
641.14 ...Gaseous
641.15 ..With solar concentration

516 **MOTOR OPERATED BY EXPANSION AND/OR CONTRACTION OF A UNIT OF MASS OF MOTIVATING MEDIUM**
517 .Unit of mass is a gas which is heated or cooled in one of a plurality of constantly communicating expansible chambers and freely transferable therebetween
518 ..Having means to change operational phase relationship of working member and displacer
519 ..Expansible chamber having rotatable or oscillatory displacer
520 ..Having free floating displacer or transfer piston
521 ..Having means to increase or diminish quantity of motivating mass
522 ..Having means to control rate of flow of mass between chambers
523 ..Having electrical heating means for mass
524 ..Having means to control temperature of heating or cooling chamber

525 ..Motor having plural working members
526 ..Motor having regenerator for mass
527 .Mass is a solid
528 ..Mass heated because of resistance to flow of electric current
529 ..Mass is bimetallic
530 .Mass is a liquid
531 ..Liquid is vaporized
508 **FLUID WITHIN EXPANSIBLE CHAMBER HEATED OR COOLED**
509 .Special motive fluid
510 .Air rarefied by combustion
511 .Fluid mingling (e.g., condensation)
512 .Having means within the working chamber to effect the pressure of fluid therein
513 ..Electric heating means
514 .Concurrent fluid supply and vaporization
515 .Having control means for heating or cooling means
642 **MOTIVE STEAM GENERATED FROM HOT WATER CHARGE BY REDUCING PRESSURE ABOVE CHARGE**
643 **MOTIVE FLUID ENERGIZED BY EXTERNALLY APPLIED HEAT**
644.1 .Heating motive fluid by nuclear energy
645 .Process of power production or system operation
646 ..Including start up, shut down, cleaning, protective or maintenance procedure
647 ..Including operating at or above critical pressure
648 ..Including production of withdrawable product or steam for external use
649 ..Including mixing or separating materials of different chemical compositions in a motive fluid flow path
650 ..Producing power by heating and cooling a single phase fluid
651 ..Including vaporizing a motive fluid other than water
652 ..Of accommodating, fluctuating or peak loads
653 ..Including superheating, desuperheating, or reheating
654 ..Including mingling motor exhaust steam with boiler feed water
655 .Noncommunicating heat transferring motive fluid system (e.g., cascade, etc.)
656 .Having ancillary structure for starting
657 .Having apparatus cleaning, sealing, lubricating, purging, standby, or protecting feature
658 ..Damage to heat receiving element prevented by automatic means maintaining minimum flow
659 .Including heat, steam, or compressed gas storage means
660 .Having condition responsive control
661 ..Of or by heat rejecting means or its bypass
662 ..Involving feed from source means to separate motor stages or utilizing means
663 ..Of branched feed to, condition of, or heating means for motive fluid between motor stages
664 ..Of or by heat source material or element
665 ...And of or by boiler liquid level or feed
666 ..Of bypass of superheater or desuperheater
667 ..Of means controlling boiler or its feed
668 .Power system physically related to vehicle structure
669 .Motor mounted in or on boiler
670 .Power system involving change of state
671 ..Motive fluid comprises a material other than steam or water
672 ...Motor exhaust used in combustion zone
673 ...One fluid absorbs or reacts with another
674 ...Air and steam supplied to motor
675 ..Gravity motor actuated by weight of condensed vapor
676 ..Including plural distinct boilers, heat supplies or external sources of vapor

677 ..Serially connected motor with intermotor supply or withdrawal of motive fluid
678 ...Withdrawn fluid heats boiler feed indirectly
679 ..Having motive fluid reheater between serially connected motors
680 ...Motive fluid bypassing upstream motor heats reheater
681 ..Motor exhaust mixes with combustion products of boiler heater
682 .Single state motive fluid energized by indirect heat transfer
683 ..Motor exhaust fed into combustion device
684 ..Including interstage reheat means
325 **PRESSURE FLUID SOURCE AND MOTOR**
532 .Shock or resonant wave type of energy transmission
533 .Pulsator
534 ..Having signal, indicator or recorder of apparatus condition
535 ...Responsive to leakage of pulse fluid
536 ..Plural correlated pulsators transmitting unlimited rotary input to unlimited rotary output
537 ..Programmed, self-cycled or self-pulsed
538 ...Including electrical control or actuation
539 ...Cam drive of plural masters
540 ...Including timer or time delay means the cycle
541 ...Having means terminating cycle at parking or holding position
542 ...Pneumatic device having pulse air bleed or supply means
543 ...Self-operated pulse fluid purge or quantity adjustment structure
544 ...Continuously acting self-pulsing master with manually settable slave release or output control valve
545 ..Having electricity or magnetically operated structure
546 ..Pulsator synchronizes movement of plural outputs
547.1 ..With control of or by a separate power fluid, etc.
547.2 ...By pressure responsive valve dividing flow between motor and an auxiliary load
547.3 ...By manually operated valve dividing flow between motor and an auxiliary load
548 ...Flow in recirculating circuit controlled
549 ...Master structure provides non-overlapping periods of pressurization of diverse pressure ranges in distinct pulsator circuits
550 ...Master driven by manual power control lever on power failure and having means adjusting lever throw or master resistance responsive to failure of power fluid supply
551 ...Manual master and controller of motor driven master actuated by separate linkages to a common operating lever
552 ...Mechanical feedback to manual control controls power fluid to establish position of working member of master
553 ....With distinct piston or diaphragm exposed to pulsator pressure imparting feel to manual control
554 ....Having load deformable means between master working member and motor thrust means adjusting bias of manual control
555 ...Master movement of master produces a pressure that controls the power fluid
556 ....Power fluid input controller operated by piston or diaphragm acted on one side by pressure of a manual master and on the other by pressure of a power driven master
557 ....Pressurized fluid from manual master charges slave and controls power fluid to separate master

558 .....Fluid from the manual master fed to slave through a passage in the working member of the power master
559 ......Passage extends across the expansible chamber of the motor of the power master
560 ...Power fluid also fed into a separate expansible chamber directly driving output means
561 ..Pressure balancing free piston or diaphragm between parallel pulsators
562 ..Master piston of one pulsator circuit drives master piston of a parallel circuit through a resilient, fluid or lost motion connection
563 ..Expansible chamber of output pressurized directly by motive fluid and indirectly by a master driven by the motive fluid
564 ...Delivery pressure of master lower than pressure driving master
565 ..Master and diverse non-pulsator drive of output member or members
566 ...Manual master and alternate nonmanual pressure fluid source feed output motor
567 ..Including plural separately operable master actuators or master units driving a common slave
568 ..Having distinct means for holding a pulsator element in set position
569 ...Distinct externally operable valve sealing pulse fluid in slave
570 ...Mechanical latch, brake or detent
571 ..Double-acting slave unit or opposed slaves having a single output
572 ...Having pulse fluid pressure or quantity compensating or adjusting means
573 ....Self-acting phase balancing means acting at midpoint or end of stroke
574 ..Automatic control of plural stage pressure generation or utilization
575 ...Automatic trapping of fluid back of delivery piston forms temporary pulsator driving piston during one stage
576 ...Of separate movement of plural delivery pistons
577 ....Central externally driven piston drives surrounding piston means through a load responsive connector
578 ...Unitarily movable displacer delivers fluid from two delivery chambers, one chamber being ineffective under high pressure delivery
579 ..Slave of first master drives master of another slave
580 ...Parallel masters driven by first pulsator
581 ..Plural structurally related master pistons, cylinders or pulsator circuits
582 ..Having safety standby structure becoming operative upon apparatus malfunction
583 ..Pulse fluid vessel embracing output piston and fluid displacing element
584 ..Having separately and manually operated structure for charging, discharging bleeding, or adjusting pulsator volume
585 ..Holder for reserve liquid feeds master
586 ...Having means to establish holding pressure in pulse liquid
587 ....Pressure maintained through inlet or piston cylinder of master
588 ...Master piston traps liquid on advance across a feed port in cylinder wall
589 ...Master piston or its actuator mechanically operates valve between holder and master cylinder
590 ..Condition responsive device limits return flow from biased slave
591 ..Having valve, director, or restrictor in pulse fluid flow path

592 ..Having, surge chamber, fluid supply means, or means compensating for fluid expansion, contraction or leakage
593 ..Having fluid motor driving piston of master unit
594 ..Having cam, or lever system driving master
326 .Utilizing a mixture, suspension, semisolid or electro-conductive liquid as motive fluid
327 .Methods of operation
328 .Having a signal, indicator or inspection means
329 .Condition responsive control means responsive to, or compensating for, motive fluid compressibility, temperature variation or viscosity variation driven master
330 .Coaxial impeller and turbine unit
331 ..Reversible turbine or turbine system
332 ...Having pitch control or motive fluid flow guide or reaction blade means
333 ...Having means to brake or free flow guide means
334 ...Having means to remove or insert flow guide means from or into motive fluid flow path
335 ...Having plural individually actuatable units
336 ..Having filtering, de-aerating, cleaning or bleeding structure
337 ..Having heating or cooling means
338 ..Having shock, vibration or surge control structure
339 ..Having lubricating means
340 ..Plural turbines drive relatively movable output members
341 ..Having brake or clutch controlling movement of a flow guide located in the impeller-turbine flow path
342 ...With means adjusting blade orientation or blade exposure in flow path
343 ...Speed or fluid condition responsive brake or manually adjustable brake
344 ....Braked casing
345 ...One-way clutch between the movable guide, an impeller, turbine or a second movable guide
346 ...Plural movable guides, one having a one-way clutch to frame
347 ..Having condition responsive or manually settable control means to regulate unit output
348 ...Distributes motive fluid between plural units, stages or guides
349 ...Adjusts impeller or turbine axially
350 ....Variable face clearance
351 ...Controls scoop operation for removing liquid from rotating casing
352 ...Of means within an impulse, reaction or energy transfer flow path being adjustable to modify flow of motive fluid
353 ....Motive fluid guide vane transferable axially into or out of motive fluid flow path
354 ....Pitch or orientation of flow directing guide or blade controlled
355 .....Speed responsive
356 .....Motive fluid pressure responsive
357 ...Of means adjusting the mass of level of motive fluid at the impeller energy transfer zone
358 ....Including continuously driven auxiliary pump
359 ....Exhaust valve
360 .....Motive fluid pressure responsive
361 ..Having separate guide or reaction means in circuit including impeller and turbine
362 ...Rotatable guide or reaction means coaxial with the impeller
363 ..Plural impeller-turbine units
364 ..Impeller or turbine integral with unit housing
365 ...Fluid deflecting means
366 ...Toroidal impeller and turbine
367 ....Having core or ring member at interface

368 .Control by independently operated punch card, tape, digital computer, counter, template, or programmer cyclic control
369 .Cyclically operable reciprocating or oscillating motor or output stroke device
370 ..Pneumatic motor
371 ..Having means to store and release energy usable to energize motor work output means
372 ...Pneumatic counter-balance of gravity load on motor (e.g., deep well pump rod, etc.)
373 ..Progressive change of stroke length in successive strokes
374 ..Correlated independently movable output members
375 ..Correlated power input pumps and/or pressurized fluid sources
376 ..Motor control means having timer or time delay means
377 ...Provides dwell or press period at end of stroke
378 ..Having purging, surge accommodating, or leaking handling or replenishing structure
379 ..Having condition responsive cycle abort means or means for manual control of motor output
380 ..With means to shut down system after a complete to and fro cycle of the motor means
381 ..Having condition responsive control of variable displacement pump
382 ...Cam or gear carried by stroke device varies displacement pump
383 ..Automatic or cyclic means provided plural distinct motor speeds in cycle
384 .Expansible chamber type volumetric responsive measuring device in series with or driven by output motor operates the motor controller
385 .Manual pump pressurizes fluid to position output motor motive fluid control valve
386 ..Manual pump supplies motive fluid to output motor when power motive fluid pump is inactive
387 .Distinct structure metering and dispensing a stroke length determining volume of motive fluid to the motor
388 .Full range correspondence of position of external manipulator and motor positioned member effected by feedback linkage
389 ..Positioned member is displacement controller of second motor pump
390 ..Electrical feedback means
391 ..Feedback linkage controls variable displacement pump
392 ..Feedback includes plural movable valve parts
393 .Manipulator for motive fluid control valve having load feel or motor pressure feedback
394 .Having apparatus control by timer or delay means
395 .Control relative to independently driven oscillator, speed standard or pacer device
396 .Utilizing lubricant, starter motor, cooling fluid, or fluid used for combustion in an internal combustion engine
397 ..Vacuum generated by internal combustion engine intake manifold powers motor
398 .Utilizing natural energy or having a geographic feature
399 .Unsafeness, unreadiness or disarray prevent manual change or operative state
400 .Selective or simultaneous power and manual energy inputs
401 ..Fluid motor and directs manual drive of output device
402 ..Separate manual and motor driven pumps supply motive fluid to output motor
403 .Apparatus having means responsive to or ameliorating the effects of breakage, plugging, mechanical failure or power failure

404 ..Stand-by stored energy means activated responsive to malfunction or power failure
405 ..Second motive fluid supply means takes load responsive to failure of first
406 ..Output means locked, positioned or released on failure of motive fluid supply means
407 .Pneumatic motor with gas supply or removal device
408 ..Convertible motor-pump device selectively charges and is driven by gas from storage vessel
409 ..Having automatic control
410 ...Responsive to condition in gas storage vessel
411 ...Suction pressure on motor regulated
412 ..Having pump device
413 .With control means for structure storing work driving energy (e.g., accumulator, etc.)
414 ..Energy of braking or of reversed load on motor stored
415 ..Accumulator pressurized by gas pump or external gas supply
416 ..Plural accumulators
417 ..Stroke device driven by successively operated energy input structure and stored energy structure
418 ..Control by sensor of accumulator condition
419 .Motor driven by motive fluid of system drives pump pressurizing motive fluid of system
420 .Having condition responsive control in a system of distinct or separately operable outputs or output drive units
421 ..With plural pump or motive fluid source relationships selected by multiway valve
422 ..Independently actuatable outputs with condition responsive means insuring sufficiency of feed of motive fluid
423 ..Including means for controlling or for reversing input pump drive
424 ..Serially connected motors controlled to establish parallel operation or to by-pass a motor means of the series
425 ..Condition responsive means establishes number of motor sections driving a common output
426 ..Speed of, pressure in, or position of one output motor or motor section controls another
427 ..With manual control or selection of motor, motor speed or motor load
428 .Having condition responsive control in a system of separately operable power input pumps, pump motors, pump cylinders or pressure fluid sources
429 ..With externally operated multiway valve changing the relationships of the motive fluid pressurizing or supplying means
430 ..Pressure or volume responsive means shifts the relationship
431 .Condition responsive control of or by input to input pump drive means
432 ..Pump drive means deactivated responsive to position of output stroke device
433 .Having correlated or joint actuation of controller of input to motive fluid pressurizer and of controller of motive fluid floow
434 ..Interlinked pump drive controller and manipulator of stroke device
435 .Having a mechanical clutch or brake device in the power train
436 ..Correlated control of device and motive fluid flow controller
437 ..Selective fluid and mechanical drive of output from input
438 ...Condition responsive selection
439 ..Device acts on intermediate reactive rotor to modify speed ratio or direction

440 ...Condition or direction responsive device
441 ..Condition or direction responsive device
442 ..Device holds output in adjusted position
443 .Servo-motor having externally operated control valve sets motor or pump displacement
444 ..Having auxiliary pump or external source of motive fluid supplying servo motor
445 .Condition responsive control of pump or motor displacement
446 ..Pump displacement varied responsive to position of motor or output device
447 ..Control actuated by a servo-motor fed by a speed indicating auxiliary pump
448 ..By means sensing rotational speed of output motor
449 ..By means sensing rotational speed of prime mover or pump
450 ..Choke in motor feed or discharge line establishes displacement control pressure (e.g., rate of flow responsive, etc.)
451 ..Controlled by torque of motor or motor discharge pressure
452 ..Pump displacement controlled by pump discharge or motor feed pressure
453 .With means purging, cleaning or separating undesirables from motive fluid
454 ..Solids from liquid separator
455 .Having leakage collecting structure
456 .Having distinct cooling or lubricating structure
457 .Collapsible joined device having fluid trapping valve in joint
458 .Having assembly or repair structure
459 .Condition responsive control of motive fluid flow
460 ..Holding or braking valve in motor exhaust line controlled by pressure in motorfeed line
461 ..Discharge from contracting cylinder of double-acting motor controlled
462 ..With externally operable multiwasy valve means directing flow to a stroke device
463 ...Sensor of external condition controls valve
464 ..Of motive fluid transfer between a reservoir and a recirculating path of a pump motor loop
465 ..Having externally operable means for setting motor or pump displacement or direction of rotation
466 ..Of braking or holding valve in motor discharge line
467 ..Stroke cylinder open to exhaust responsive to position of output member
468 ..Of by-pass of motor, pump or flow control element
469 .Having means controlling or attenuating shock vibration, sticking or chattering
470 .Externally operated multiway valve or interconnected control elements control motive fluid for a limited stroke to-and-fro device
471 ..Having plural distinct or separately operable output means
472 ..Flow to opposed expansible chambers having a common output reversed
473 .Pump means moves motive fluid from one chamber to an opposite chamber of opposed expansible chambers having a common output
474 ..Valve or restriction controls gravity or spring return of output
475 ..With means compensating for charge leakage or volume difference between discharging and receiving chambers
476 ..Reversible delivery from pump means
477 .Ram driven by fluid pumped from reservoir
478 ..Having means pressurizing, vacuumizing or venting reservoir

479 ..Having selective or variable pump displacement or pump drive leverage
480 ..Telescopic ram
481 ..Having fluid trapping means with a manual release or by-pass holding ram
482 ...Release valve and pump actuated by a common handle
483 .Having selecting means distributing motive fluid between plural motors or cylinders rotatating a common output shaft
484 .Having plural energy outputs (e.g., plural motors, etc.)
485 ..Unit having coaxial rotary output shafts and pump means in a common housing (e.g., automobile differential, etc.)
486 .Having plural energy input means, pumps or diverse pump outlets
487 .Input pump and rotary output motor system having displacement varying type of direction or speed selector
488 ..Including auxiliary system feed pump
489 ..Having valve means controlling flow between pump and motor
490 ..Both motor and pump have displacement adjustment means
491 ...Having common or intercontrolled adjuster actuating means
492 ....Motor swash plate and pump swash plate intercontrolled
493 .Valve means reverses flow from pump to reversible rotary motor
494 .Including by-pass or restrictor controlling flow circuit
495 **MOTOR HAVING A BUOYANT WORKING MEMBER**
496 .With means to vary buoyancy of working member
497 .Working member actuated by the rise and fall of a surface of a body of fluid
498 ..Having tide responsive working member positioning means
499 ..Having means responsive to lateral impulse of fluid
500 ..Having articulated buoyant members
501 ..Motor is free floating unit
502 ..Having fluid flow or wave controlling, confining or directing means
503 ...In which the control means is variable
504 ..Having flexible strand working member motion transmitting means
505 ..Having relatively movable working members
506 ..Working member pivotally supported
507 ..Having one-way clutch power transmission means, e.g., ratchet, etc.
685 **MOTOR HAVING EXHAUST FLUID TREATING OR HANDLING MEANS**
686 .Having condition responsive control of exhaust structure or by exhaust condition
687 .Motor-exhaust assembly with stress relieving or absorbing structure
688 .Water mingled with exhaust steam
689 .Exhaust fluid mingled with non-exhaust fluid
690 .Motor and indirect heat exchanger
691 ..Boiler feed water heated by exhaust
692 ..Having condensate pump
693 ..Plural heat exchangers
694 .Including exhaust flow directing or dividing device
695 ..Device directs exhaust of air motor into atmosphere
696 ..Device is draft structure of hydraulic motor
697 ..Turbine discharge directed to flow line
698 **SYSTEM HAVING PLURAL MOTORS OR HAVING DIVERSE TYPES OF ENERGY INPUT**
699 .Spring type motor and internal combustion engine motor
700 .Motors intercontrolled responsive to angular speed differential of rotatable output shafts
701 ..Hydraulic or pneumatic intercontrol system
702 ..Electrical intercontrol system

703 .Control including pacer, oscillator, punch card, template or tape
704 .Control including clock, retarder or programmer
705 .Signal, indicator or inspection means
706 .Having condition responsive control
707 ..Of branched flow of motive fluid through serially connected motors
708 ..Of or by motor cooling, ventilation, or brake system
709 ..Of or by disconnect or load release means to output means or between motors
710 ..Intercontrol of internal combustion engines responsive to relative fuel or manifold conditions
711 ..First motor load share adjusted relative to the load share of a second motor driving a common load, responsive to a condition of the second motor or of the load
712 .Engine apparatus or system actuatable selectively or simultaneously by internal combustion of fuel and by expansion of motive fluid
713 .Plural motors having brake means for motor or output means
714 .Plural motors having supply or control of cooling, lubricating, or scavenging fluid
715 .Plural motors, connected for serial flow of motive fluid
716 .System of plural motors having a common output structure
717 ..And another output
718 ..Having disconnect means between a motor and the output
719 .Interrelated or group control operating means for plural motors or outputs
720 .Unitary support for plural motors
721 **MISCELLANEOUS**

CROSS-REFERENCE ART COLLECTIONS

900 **EXCESS AIR TO INTERNAL COMBUSTION ENGINE TO ASSIST EXHAUST TREATMENT**
901 **EXHAUST TREATMENT SPECIAL TO ROTARY INTERNAL COMBUSTION ENGINES**
902 **ROTARY REACTOR, SEPARATOR OR TREATER OF EXHAUST OF AN INTERNAL COMBUSTION ENGINE**
903 **CLOSURES OPERATORS**
904 **PROPELLER OR AIR PLANE SYSTEM**
905 **WINDING AND REELING**
906 **ENGINE SPEED RESPONSIVE THROTTLE CONTROL SYSTEM**
907 **WORKING MEMBER POSITIONED AGAINST COUNTERFORCE BY CONSTANTLY APPLIED MOTIVE FLUID**
908 **WASHING MACHINE SYSTEM**
909 **REACTION MOTOR OR COMPONENT COMPOSED OF SPECIFIC MATERIAL**
910 **FREE PISTON**
911 **FLUID MOTOR SYSTEM INCORPORATING ELECTRICAL SYSTEM**
912 **COOLING MEANS**
913 **COLLECTION OF REGGIO PATENTS**
914 **EXPLOSIVE**
915 **COLLECTION OF GODDARD PATENTS**
916 **UNITARY CONSTRUCTION**
917 **SOLID FUEL RAMJET USING PULVERIZED FUEL**

FOREIGN ART COLLECTIONS

FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collection listed below. These collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

REACTION MOTOR (E.G., MOTIVE FLUID GENERATOR AND REACTION NOZZLE, ETC.) (60/200.1)

FOR 100 .Including afterburner (60/200.1)
FOR 101 .Air supplied by ram effect (60/270.1)
FOR 102 .Motive fluid outlet means (60/271)
FOR 103 .Processes (60/39.02)
FOR 104 ..Regulation of power output (60/39.03)
FOR 105 ..Multiple expansion (60/39.04)
FOR 106 ..Addition of steam and/or water (60/39.05)
FOR 107 ..Ignition and/or fuel injection (60/39.06)
FOR 108 .With nonmotor output (60/39.07)
FOR 109 .With starting device (60/39.141)
FOR 110 ..Separate starting device or motive fluid source (60/39.142)
FOR 111 ..Re-expansion (60/39.161)
FOR 112 .With regulation of power output (60/39.2)

COMBUSTION PRODUCTS USED AS MOTIVE FLUID (60/39.01)

.With variable oxidizer control (60/39.23)
..Automatic (60/39.24)
FOR 113 ...Oxidizer (60/39.29)
FOR 114 .With mounting or supporting structure (60/39.31)
FOR 115 .With expansible connections (60/39.32)
FOR 116 .Convertible and combined (60/39.33)
FOR 117 .Coaxial combustion products generator and combined (60/39.36)
FOR 118 ..With turbine (60/39.75)